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If we can't get to theatre, we can't learn to operate

A study of factors influencing core trainee access to the operating theatre in trauma and orthopaedics.

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Core surgical trainees must learn operative skills by observing, assisting and performing procedures in the operating theatre. Competence in basic 'index', specialty-specific surgical procedures is a requirement for the successful completion of core surgical training and progression into specialty training year 3 (ST3).¹ There is widespread concern that core trainees are not receiving adequate exposure to the operating theatre to meet their educational objectives for training.^{2,3} Reasons suggested include the shortened working week,⁴ a move away from the firm-based structure of training to that of shift patterns,^{5,6} chronic rota gaps,³ and a rise in the demands of service provision.⁷

A 2016 report by The Royal College of Surgeons of England showed that 60–80% of the time in a core surgical trainee's working week was spent on service delivery rather than training.² For the average core surgical trainee on an average shift, a mean of just 34 minutes was spent in theatre operating as compared with 62 minutes on general ward administrative work, 53 minutes preparing discharge paperwork and 30 minutes performing routine, foundation competency-related ward procedures such as cannulation and phlebotomy.⁸ These administrative and service provision

to report the quality of their training as 'poor' or 'very poor' as compared to all other specialties.³ In a climate of striving to improve training efficiency and make 'every moment count',⁵ there is a contradiction between the optimal training environment and the reality of the demands of the everyday workplace for this group of trainees. This is the first study to examine the factors influencing core surgical trainee access to the operating theatre.

MATERIALS AND METHODS

This qualitative research study was carried out at the University Hospital Coventry and Warwickshire. Ethical approval was granted for this research. The study was embedded within a randomised controlled trial measuring the impact of a simulation training intervention on a regional cohort of core surgical training year 1 (CT1), year 2 (CT2) and ST3 trauma and orthopaedic surgeons in training (ISCRTN ref 20431944).

Setting and participants

The trial participants in the intervention arm of the study ($n=14$) were invited by email to participate in the qualitative part of the study. Eleven participants were subsequently interviewed. Of the three who did not take

Data collection

Eight of eleven interviews took place face-to-face and three interviews were conducted by telephone at the request of the participants. All interviews were recorded using a digital voice recorder and took place approximately halfway through the training year. The interviewer (HKJ) was known to all participants as an acquaintance and trainee peer. Previous work has shown that matching the major social characteristics of the interviewer and interviewee is an important determining factor in the effectiveness of the interview.⁹ All participants were assured of confidentiality and gave their expressed permission for the interview to be recorded and analysed for research purposes. A pre-piloted, semi-structured topic guide was used to structure the discussion.

Data analysis

An experiential thematic analysis approach was used for analysis, with a post-positivist and critical realist epistemological and ontological stance. This approach prioritises the participants' own framing around issues, allowing a fuller multifaceted understanding of the issues under discussion in an exploratory and flexible manner that considers the breadth and complexity of human

In a climate of striving to improve training efficiency and make 'every moment count', there is a contradiction between the optimal training environment and the reality of the demands of the everyday workplace

activities dominated the average shift at the expense of time spent in the operating theatre, and are considered to have little or no training value for core surgical trainees.⁸ Some 91% of core trainees felt that these tasks could be successfully performed by a non-doctor member of the healthcare team.² In the latest National Training Survey, surgical trainees were more likely

part, one declined, one had emigrated abroad into a non-clinical job role and one did not respond to attempts at contact. Three participants were female, eight were male, eight were in a placement at a regional major trauma centre and three were in district general hospitals at the time of the interview. One participant was at CT1 level, five were CT2 and five were ST3.

experiences and perspectives. The analysis approach was structured around Braun and Clark's checklist of criteria for good thematic analysis.¹⁰

The digital audio recordings were professionally transcribed and rechecked against the original tapes to ensure accuracy. An initial process of reading and familiarisation with the transcripts was followed by

Box 1 Summary of factors influencing core surgical trainee access to learning in the operating theatre

Facilitative factors

Colleague support:

- Advanced nurse practitioners
- Junior doctor peers
- Senior support

Protected time:

- Timetabled
- Trainee allocated lists
- Designated free time from other duties

Trainee seniority:

- Improved efficiency with non-training tasks
- Prioritise own learning
- More proactive in seeking training
- Assertiveness to leave ward or delegate

Barrier factors

Lack of junior staff covering wards:

- Loss of foundation year 1 doctors
- Rota gaps
- Shorter working week

High ward workload:

- Medically complex patients
- High patient turnover
- Inefficient bureaucratic processes
- Not educationally valuable for this group
 - could (should?) be done by others (eg advanced nurse practitioners)
- Mismatch between curriculum and actual working environment

Wrong case mix:

- Too specialised
- Not enough routine trauma exposure

the start of the coding process and searching for themes. A complete coding strategy was used, generating a mixture of semantic and latent codes, in a recursive process involving several revisions, until the entire dataset was completely coded. NVivo version 11.4.3 11 (QSR International Pty) qualitative data analysis software was used to collate relevant extracts for each theme. Once coding was deemed complete, patterns were searched for within the coded data, from which themes were developed. Themes generated during the analysis process were checked against each other and repeatedly referenced back to the original data set. This was to ensure they each had distinct scope and purpose and were faithful to the data, and that together they would provide a meaningful and coherent overview of key concepts that addressed the research objectives.

RESULTS

Within the overarching theme of ‘getting into the operating theatre’, participants reported experiences that can be broadly clustered into ‘facilitative factors’, positive practices that enabled trainees to attend the operating theatre to gain training experience and ‘barrier factors’, negative factors that impeded access to training opportunity in the operating theatre. These findings are summarised in [Box 1](#).

Facilitative factors

• Support from allied health professionals:

The presence of advanced nurse practitioners (ANPs) or perioperative specialist practitioners to perform routine ward duties freed trainees to attend the operating theatre: ‘we’re supported by the ANPs as well, so they fully understand ... are very much on your side that, you know ... you get to theatre and that should be the case’ (Participant 7).

• Timetabled, protected theatre time:

The allocation of organised, timetabled, protected time during the working week to attend the operating theatre was very positively viewed by participants, and enabled them to attend theatre without competition with other trainees and perceived conflict with ward work: ‘we’re all allocated trauma lists pretty much at least once every other week, so there’s lots of operating’ (Participant 9).

• Departmental culture:

The experience of a facilitative working environment in which to attend the operating theatre was inconsistent between rotations and appeared to be dependent on location and senior support (or lack of it). ‘I think it really makes a difference with what senior team you have’ (Participant 14).

References to departmental ‘supportiveness’ were frequently made by participants who had experienced a facilitative environment for accessing the operating theatre. Support in this context was both practical in the form of, for example, ANP or other junior colleagues

covering the ward workload, and also more broadly psychosocial, whereby participants were ‘expected’ to be present in the operating theatre and being involved in operations was an accepted part of their role as surgeons in training. Explicit recognition of the training needs of this group by the consultants and efforts to facilitate their access to the operating theatre were crucial factors in trainees’ perception of the post as being useful towards training rather than merely for service provision. ‘My current placement is fantastic, the rotation is much more orientated towards training us to operate, whereas in a previous job in a different hospital the distinction was very blurred between whether I was actually a surgical trainee or foundation doctor in terms of day-to-day activities’ (Participant 12).

• CT2 compared with CT1:

Participants reported that with increased experience, most typically at CT2 level, their confidence grew in their ability to leave the ward to seek out training opportunities in the operating theatre. This was a combination of improved efficiency with performing ward-based tasks and a more proactive approach to managing their own time, as well as a stronger sense of professional self-identity as a ‘surgeon in training’. ‘I’ve been able to get down to theatre a lot more, just by, you know – leaving my F2s [foundation year 2s] and GP trainees [on the ward] and you know that actually, my training priorities are sort of different to [theirs]’ (Participant 7).

We hypothesise that intrinsic trainee personality characteristics and self-confidence are likely to influence their ability to delegate tasks and seize ad-hoc opportunities to attend the operating theatre, although we did not explicitly explore this.

Barrier factors

Factors that obstructed trainee access to the operating theatre are summarised in [Box 1](#).

• Lack of junior staff covering the wards:

Previously, the most junior member of the

team would have been a pre-registration house officer (now called foundation year 1 or F1). Their principal responsibility was to manage the everyday medical and administrative tasks concerning the ward inpatients. These most junior doctors have increasingly been moved away from trauma and orthopaedic rotations as their working hours have been reduced, and, as such, the burden of managing the ward tasks in trauma and orthopaedics in their absence has fallen to core surgical trainees, who would have previously been attending the operating theatre and learning how to perform operations: 'the biggest problem [with accessing training in the operating theatre] is that we no longer have F1s' (Participant 3). Chronically unfilled rota gaps, combined with shift-based on-call patterns have exacerbated the problem. A shorter working week reduces the opportunities for training and some participants reported having to seek training opportunities outside of their working hours: 'I think there's a lot more pressure now to spend your own free time to get the training that you need ... that is sort of what you have to do ... it's much more of a problem than it used to be' (Participant 13).

- **High ward workload:**

The administrative workload involved in managing admissions, requesting tests, chasing results and processing discharges, which was traditionally the domain of the F1 doctors, is burdensome and time consuming for core trainees, whose working week is already shortened. This workload is such, in part, because of the increased patient turnover and pressure to progress discharges to manage capacity in the modern health-care system, and partly because there is chronic underinvestment in technology in the NHS. Many of these processes are inefficient and unduly bureaucratic,^{11,12} involving technology that is outdated, slow and considered obsolete elsewhere.¹³ It is striking that chronic process inefficiency is often accepted as part of NHS

working life in this population, and the lost productivity of the staff as a result is not addressed at a managerial level.¹³ These routine administrative ward tasks carry no training value beyond the earliest months of F1 level, and serve to hinder the efforts of surgeons in training to meet their learning objectives for training.²

In addition to the administrative workload, inpatients in trauma and orthopaedics are often elderly, medically complex and require a substantial input of ward care from doctors. Lack of staff at junior levels was cited as a key obstructive factor in accessing the operating theatre: 'we've got people who are willing to train ... it's just simply [that] there aren't the staff and junior cover required to cover the wards to facilitate those guys getting into theatre' (Participant 13). 'Previously what would have been a senior SHO [senior house officer, postgraduate year 3–4], able to be mobilised to theatre and clinic and get training experience is frequently the most junior person on the team ... I spent 12 months ... with no registrar and no F1 as a CT2 ... we'd at times have 50 [in]patients' (Participant 3).

The provision of regular physician input for these frail, multimorbid patients is highly variable, and specialist orthogeriatric provision is inconsistent. Often, these patients will be seen on an ad-hoc advisory basis by physicians. The execution of complex day-to-day medical management is left in the hands of core surgical trainees, which as well as having the potential for being outside their realm of competence and learning needs, is extremely time consuming. 'I actually found it very difficult to get training in theatre, leaving the wards was quite difficult' (Participant 10).

- **Wrong case mix:**

A further barrier to accessing training was the balance of cases encountered in the training post. Participants who were doing core training in the major trauma

centre reported that a predominance of complex, polytraumatised patients within their typical caseload meant that there was a lack of opportunity to practise the basic procedures in which they were required to demonstrate competence. These complex procedures, while undoubtedly interesting, were consultant-led and did not provide a training opportunity that was appropriate for their level: 'being a level one trauma centre ... taking up [time on the trauma list] with a big case like a spinal case or a pelvic case and so my experiences of normal, routine, trauma operations [are] actually fairly limited' (Participant 10).

Once training was taking place in the theatre, there were other obstacles to learning, including a perception of pressure from other members of the theatre team who might be impatient that a trainee surgeon was performing the operation. 'There's a lot of pressure, I think, on the trainee and the consultant to try and hurry up the case and get it done quicker' (Participant 13); 'external pressures, you know, the anaesthetist or something like that or an unwell patient' (Participant 7).

- **Frustration with daily working environment:**

There was a striking incompatibility between the expected educational outcomes of core surgical training and the demands of the everyday working environment for this group. 'Even when you are [qualified for five years] ... you are still essentially the most junior person on the ward delivering, catheterising, cannulating, prescribing ... that's not what the CT2 [postgraduate year 4] curriculum is' (Participant 3).

From within this struggle to reconcile the challenges of being within a daily working environment, which does not align with the training curriculum and what is required in terms of educational attainment, an atmosphere of competitiveness with peers

for theatre access was seen. 'Doing my core training I actually found it very difficult to get training in theatre. I was competing with other SHOs' (Participant 10).

There was a tangible sense of frustration that accessing the learning opportunities to meet their learning objectives was such a struggle. When set within the known landscape of low morale and high prevalence of burnout among junior doctors^{3,4,7,14} as well as attrition in trainee application numbers to higher specialist training, this is an important finding.

- **Downstream effects:**

A consequence of the lack of appropriate training opportunities for this group meant that when they progressed to the next level of training (ST3), these

Trainees who move from core training into ST3 often find themselves unable to offer any peer-training to their more junior colleagues. The ST3s need to undertake the 'index' operations themselves that traditionally would have been the domain of the core trainees, as they had not had the exposure at an earlier, more appropriate career stage. Therefore, the problem perpetuates downstream, further exacerbating the situation: 'just the number of people around us is one thing, especially as a lot of the [registrars] being quite junior, they still need those index procedures' (Participant 6); 'I had a ST3 [as registrar] at the time so I didn't get to do much' (Participant 7).

Surgeons in training who work in a unit without adequate junior ward staff/ ANP support and who are in a team with

the operating theatre with an appropriate case mix. The results of this qualitative study suggest that surgeons in training at CT1 and CT2 level in trauma and orthopaedics are facing very considerable challenges in reconciling these curriculum requirements within their everyday work environment in meeting these training objectives. They describe being 'stuck' on the wards carrying out administrative and basic medical tasks that offer no training value, at the expense of attending the operating theatre.

These findings are important for two main reasons. First, on a background of recent contract issues,¹⁵ and a widespread feeling of being chronically disenfranchised and undervalued,^{3,16} junior doctor morale is startlingly low.^{14,15,17} Numerous studies have demonstrated deep-seated issues around burnout, lack of support, and not feeling valued.^{14,18,19} Furthermore, application rates to ST3 in trauma and orthopaedics are steadily decreasing, and a similar trajectory is also being seen in other surgical and medical specialties.^{20,21} A core trainee who, in addition to the considerable ordinary demands of their day-to-day professional work,³ is having to expend significant energy fighting to access the appropriate training environment to meet their basic learning objectives, is inevitably going to be more likely to feel burnt out and dissatisfied. This may be significant enough to deter them from pursuing a career in the specialty.

Second, while currently there is a move towards streamlined, run-through style training, the trauma and orthopaedic firm and 'on-call' team structure still operates according to the 'old' training hierarchy of house officer, SHO, registrar and consultant. Within trauma and orthopaedics, there is a significant change in the level of responsibility and day-to-day job remit between the SHO and registrar grades. Preparedness for assuming the registrar role at the start of ST3 is at risk if the appropriate operative experience has not been obtained at CT1 and CT2 level. There is a downstream effect here,

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trainees had not reached the operative independence of their predecessors. Many junior surgical registrars have been on the receiving end of comments from senior consultants, well-intended or otherwise, as to how today's first-year registrars are surgically inexperienced as compared to 'back in my day'. This is likely to be factually correct,² but the comparison is unfair as the daily working environment today's trainees must navigate to gain operative experience at a junior level is vastly different. Today's environment is weighted heavily in favour of service delivery at the expense of training, rather than there being some inherent flaw in the quality of modern-day registrars.

a ST3 registrar (themselves surgically inexperienced) face unacceptable challenges in achieving the exposure to appropriate training opportunities to meet their required educational outcomes.

DISCUSSION

To ensure the continued production of the highest-quality future surgeons within a reduced time frame for training, it is crucial that all training opportunities are maximised and that 'every moment counts'.⁵ The curriculum in trauma and orthopaedics is justifiably rigorous in its demands that core trainees achieve operative competence in basic 'index' trauma procedures and wound management,¹ which naturally assumes ready access to

where these unprepared junior registrars are needing to take the opportunities to practise basic index procedures for themselves as they were unable to access them in core training, so these opportunities are denied to the core trainees below them and thus the problem continues.

The root of the problem really lies in the ongoing tension between service provision and training, which is greatly exacerbated by the enormous financial pressure the NHS faces,²¹ a detailed analysis of which is beyond the scope of this article. A potential solution would be to increase the number of specialist or ANPs within trauma and orthopaedics. Clearly, their remit would need to be carefully managed to avoid further eroding the training opportunities of surgical trainees. Participants in this study reported that the ANPs were highly supportive in facilitating their access to the operating theatre by taking the burden of routine ward work from core surgical trainees. Previous work has shown that, where appropriately designed, ANPs and surgical trainees have a productive, symbiotic working relationship, which ultimately benefits patient care and training.²

Provision of ANPs clearly has a cost implication. There are some free-of-cost solutions that could help to offset some of these challenges that would be reasonably straightforward to implement. Participants in the study reported that consultant and departmental culture had a significant impact on their ability to access the operating theatre. An explicit, and pre-emptive, acknowledgement by educational supervisors and training programme directors of the tension between the demands of ward work and the need for core trainees to access the operating theatre for training would help to empower core trainees to leave the wards to attend the operating theatre and to manage expectations of ward-based nursing colleagues. Careful attention to the design of the SHO rota with the aim of maximising opportunities for training and introducing a system of allocated 'bleep-free' operating

theatre time for core trainees, as described by some of the study participants, are also some of the easy low- or no-cost options to improve access to training opportunities in this group.

The Improving Surgical Training pilot project seeks to address some of the issues discussed here by redressing the balance between service demands and training, and foster mentoring relationships between trainers and trainees.^{4,22} The trauma and orthopaedics specialty is scheduled to join the pilot in 2020,²² and it would be interesting to repeat this study when the Improving Surgical Training cohort reaches CT2 to see whether theatre access has improved.

CONCLUSION

There are significant difficulties in accessing the operating theatre among core surgical trauma and orthopaedics trainees in our study sample. The enormous time demands of the administrative and routine daily ward work are in direct conflict with the need to gain operative experience and meet learning objectives for this group of trainees. This issue merits attention as the consequence of being unable to access the appropriate training environment threatens preparedness for registrar practice at ST3 and may serve to exacerbate the known morale issues, career dissatisfaction and burnout in this group.

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